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MODERATE GRAZING PAYS on California Annual-Type Ranges

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SUSTAINED HIGH PRODUCTION of range cattle is needed to supply the wartime demand for meat and hides.

ANNUAL-TYPE RANGE, moderately grazed, produces heavier cattle and cattle in better condition than does closely grazed range.

MODERATE GRAZING maintains annual-type ranges in good productive condition.

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MODERATE GRAZING PAYS ON CALIFORNIA ANNUAL-TYPE RANGES[1]

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Steady supplies of both meat and hides in the largest possible quantities are needed to fill present wartime and future peacetime demands. These demands can best be met by moderate grazing—for moderate grazing makes the best use of present forage without impairing future yields. Briefly, moderate grazing is grazing to a degree that will permit the more desirable forage plants to maintain or increase their abundance and yet be used from year to year.

Moderate Grazing Makes More Forage and Meat

Recent experiments have shown that the weight gains and condition of cattle on California annual-type ranges depend a great deal on how closely the range is grazed. On lightly and moderately grazed ranges both cows and calves gained more weight and were in better condition during the period from January to August, which includes the main green-feed grazing season, than those on heavily grazed ranges. Heavy grazing proved detrimental not only to the cattle but also to the forage and soil. These results are important in a State where annual-type ranges support most of the livestock for a large part of the year. In California this type covers more than 25 million acres in the great central valley and coastal area.

The experiments also have furnished a basis for defining, at least approximately, the closest use that annual-type ranges in good productive condition can stand without jeopardizing the future production of forage and meat. This degree of grazing is illustrated in figure 1. Because of the variations in productivity and range conditions in different localities, each rancher must work out for his own range the degree of stocking that will result in moderate grazing and thus produce the maximum of livestock products and the highest income possible.

Moderate grazing should not be confused with light grazing. Range in good condition should not be grazed too lightly. To permit light grazing of good productive range not only results in a waste of forage that could be used to produce meat but also encourages the growth of less desirable plants. Light grazing, however, is desirable to encourage rapid improvement of range in poor or fair condition.

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[1] This Leaflet is based largely on experiments carried out at the San Joaquin Experimental Range by the Forest Service, U. S. Department of Agriculture, in cooperation with the University of California and other agencies. Detailed records of these experiments are given in University of California Bulletin 663, The San Joaquin Experimental Range, which can be obtained from the University or from the California Forest and Range Experiment Station at Berkeley.

[2] Maintained by the Forest Service, U. S. Department of Agriculture, in cooperation with the University of California at Berkeley, Calif.

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FIGURE 1.—How the annual-type range, in good productive condition, should look under moderate grazing at the time new green growth starts in the fall. Here a blanket of old dry vegetation averaging about 2 inches high protects the soil and will build up its fertility. The remaining stubble is patchy in appearance. It is thick and tall enough to hide small rocks, squirrel mounds, and livestock trails, and very little bare soil can be seen from a distance of 20 feet or more.

Soil Fertility Improved

Under moderate use enough ungrazed plant growth is left on the ground each season to improve and maintain soil fertility. Organic matter is added to the soil. Also a sufficient cover of dry vegetation protects the soil from the direct action of rain, wind, sunshine, and other forces that cause erosion or lower the fertility of the soil. Under heavy use, too much old growth is removed. This exposes the soil surface to erosion and so permits the loss of topsoil and reduces the capacity of the range to produce abundant nutritious forage.

Better Forage Mixture Produced

The amount of dry plant residue, or stubble, left on the ground partly determines the proportion of the different kinds of forage plants that grow in following years. Under moderate grazing, grasses and weeds tend to grow in about equal amounts. Both these classes of plants are needed in the cover. The grasses—such as wild oats, soft chess, and annual fescue—with their fibrous root systems, hold the soil in place better than do most weeds and, when dry, provide more forage because they do not crumble so readily. Weeds—alfilaria or filaree, bur-clover, and others—are needed to improve the palatability and provide desirable variety in the green forage. Light grazing usually results in too much grass in proportion to weeds, and heavy grazing in too many weeds in proportion to grass. Moderate grazing brings about the most desirable mixture.

Earlier Grazing Made Possible

Moderately grazed ranges produce new green forage 2 or 3 weeks earlier than those more closely grazed. The greater amount of old dry vegetation left on the ground under moderate grazing protects the young plants from drying winds and frosts, making possible earlier and taller growth of the new forage. Furthermore, much of the old dry growth is eaten with the young green forage, providing roughage for the cattle during the winter. This roughage tends to reduce the scouring that may be caused by a straight new-grass diet.

How to Judge Moderate Grazing

The best time to judge the final utilization of the range is in the fall, at the time new growth starts. Checking utilization during the summer, before the end of the grazing season, however, is helpful in showing what adjustments in stocking may be needed to obtain moderate use in the current season. In such early examinations, allowance has to be made for the decrease in plant cover that will be caused by weathering and further grazing before new forage starts to grow.

The important point in deciding whether a range is moderately grazed is to observe the amount of dry vegetation left on the range. Under

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FIGURE 2.—Indicators of heavy grazing: Dry plant cover left on the ground after heavy grazing averages less than 2 inches high. This range, where the stubble is less than 1 inch high, looks smooth, slicked off, or closely mowed. Small rocks, sticks, squirrel and gopher mounds, stock trails, and small areas of bare soil are plainly visible from a distance of 20 feet or more.

moderate grazing this dry material should appear about 2 inches tall when the new green forage starts to grow in the fall. Actually it will be patchy and mottled in appearance and vary from place to place, so that in some spots it will be shorter and in others taller than 2 inches (fig. 1).

If grazing ends in the summer or early in the fall, the dry vegetation should average somewhat taller, between 2 and 3 inches, to allow for some break-down and weathering of the cover up to the time the new green forage starts to grow. Practically all the soil should be protected by some of this old growth, which should be thick and dense enough to hide

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FIGURE 3.—Light grazing, such as is shown here, is not good economy. Instead of leaving so much forage on the range, it is better to turn it into livestock products. Such light use favors the growth of tall grasses at the expense of excellent plants like filaree and bur-clover, which give a desirable variety to the forage.

most soil mounds and rocks 2 or 3 inches in size when viewed from a distance of 20 feet or more. Little of the bare soil or livestock trails should be visible beyond this distance. Plants under shrubs or around the edges of rocks should not be grazed closely.

In contrast, heavily grazed ranges usually have a smooth, slicked-off appearance, and many bare soil spots may show through the remaining dry vegetation (fig. 2).

Lightly grazed ranges have a less patchy appearance than moderately grazed areas, and the unused plant growth averages 3 or more inches in height (fig. 3). Almost all small objects and ground features such as squirrel mounds, livestock trails, and small bare soil areas are masked by too lightly grazed forage.

Uniform Grazing Desirable

Grazing should be as uniform as possible over the entire range. Adequate fencing and water are especially helpful in getting uniform use. At best, however, there will be variations in the degree of grazing on large areas within a pasture. The swales and ravine bottoms will invariably be grazed more closely than the adjoining hillsides because these usually remain green longer and have better forage than the open hillsides. Some portions of the range near water, in fence corners, and near corrals and headquarters are almost certain to be more heavily grazed than the rest of the range. These closely grazed areas should be kept as small as possible.

Certain indicators of too heavy grazing should be watched for very carefully. If the hillsides are grazed as closely as the swales, grazing has been much too heavy. As the forage in the openings on woodland and browse range becomes scarce, cattle are forced to graze under shrubs and around and between the limbs of dead and down trees and bushes, and appreciable use in these places indicates very heavy grazing of the range as a whole.

Range Condition the Result of Range Utilization

Range utilization refers primarily to the grazing of the current forage crop and is judged by the amount of old growth left on the ground. Range condition reflects the present capacity of the range to produce forage and livestock and is indicated by the amount, vigor, and kind of forage species in the stand and by the absence or presence of erosion and other soil changes. Poor range condition is usually the result of many years of heavy grazing, which removes the protective cover from the soil. Under moderate or light grazing enough vegetation remains on the ground to prevent loss in soil fertility. Weather and soil influence range production, but maximum yields in good and bad years alike depend on the productive condition of the range. Any range not in good condition offers an opportunity for improvement.

Forage Production Determined by Range Condition

Ranges in good productive condition produce a relatively thick, even, vigorous forage crop. (See photograph on cover.) The soil has a thin layer of litter and decaying vegetation on the surface. There are no signs of active erosion. Forage production from these ranges may be several times as great as that from ranges in poor condition.

Annual-type ranges in poor condition usually produce a small, stunted forage crop (fig. 4). Sheet erosion is usually evident, and gullies are actively being cut in drainage channels. The roots of shrubs and trees are frequently exposed on hilly lands, and many small rocks are left behind on the ground where the soil has been washed away. Small dams of soil and debris are lodged on the upper side of grass clumps, rocks, stems of shrubs and trees, and similar objects. Lighter colored subsoils are exposed in many places.

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FIGURE 4.—On annual-type range in poor condition the plant cover is sparse and stunted, the lighter colored subsoils are showing in places, and gullies are rapidly being cut in the drainage channels.

Improvement of Ranges

To improve ranges that are not now in good condition, more forage should be left on the ground each season than the amount recommended for moderate grazing in this Leaflet. Doing this will build up soil fertility faster and result in progressively better forage and greater gains by livestock.

On annual-type ranges in good productive condition, moderate grazing, and the application of other good range-management practices, will yield the maximum amount of forage and meat for wartime needs as well as profit through the years to come.

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